Presentation - Experimental data is grouped in 4 categories:

- spherical mean-field nuclei: Z, N, binding energy B, charge diffraction radius R_0, charge surface thickness σ and r.m.s radius $\langle r^2 \rangle$.
- deformed mean-field nuclei: Z, N, binding energy B, energy of the 0^+ super-deformed state or fission isomer
- collective 2+ states: Z, N, energy of the first 2+ state E_{2+}, experimental uncertainty on E_{2+}, reduced matrix element $B(E2)$, uncertainty in the reduced matrix element
- terminating states: Z, N,

Form factors, diffraction radius and surface thickness - In spherical symmetry form factors $F(q)$ are computed from nuclear densities $\rho(r)$ according to:

$$F(q) = 4\pi \int \rho(r) j_0(qr) r^2 dr \tag{1}$$

where $j_0(qr)$ is the spherical Bessel function of the first kind of order 0, see e.g. Eqs. 10.1.1 and 10.1.11 in Abramowitz and Stegun, *Handbook of Mathematical Functions*, National Bureau of Standards, 1964 (10th corrected printing, 1970).

The diffraction radius R_0 is proportional to the position of the first zero of the corresponding form factor:

$$R_0 = \frac{4.493}{q_0} \qquad\qquad F(q_0) = 0 \tag{2}$$

The surface thickness σ is proportional to the position of the first maximum of the corresponding form factor:

$$\sigma^2 = \frac{2}{q_m^2} \ln \left| \frac{3N j_1(q_m R_0)}{q_m R_0 F(q_m)} \right| \tag{3}$$

where N is the number of particles (neutrons or protons), q_m is the momentum corresponding to the first maximum of the form factor $F(q)$ and R_0 is the diffraction radius.